

San Pasqual Valley Groundwater Basin

- Groundwater Basin Number: 9-10
- County: San Diego
- Surface Area: 4,540 acres (7.1 square miles)

Basin Boundaries and Hydrology

This groundwater basin underlies San Pasqual Valley and Cloverdale, Rockwood, and Bandy Canyons in central San Diego County. The basin is bounded by Lake Hodges on the west and otherwise by nonwater-bearing rocks of the Peninsular Ranges (DWR 1959; Rogers 1965; Izbicki 1983). Average annual precipitation ranges from 11 to 15 inches. Santa Ysabel, Guejito, and Santa Maria Creeks drain the valley and converge to form the San Dieguito River, which flows into Lake Hodges.

Hydrogeologic Information

Water Bearing Formations

The water-bearing units of the San Pasqual Valley Groundwater Basin are alluvium and residuum. Groundwater in this basin is unconfined (DWR 1959; Izbicki 1983) and well yields range to 1,700 gpm (DWR 1959).

Alluvium. Quaternary alluvium in this basin ranges to greater than 200 feet thick. This unit consists of unconsolidated gravel, sand, silt, and clay, and the average specific yield is about 16 percent (Izbicki 1983).

Residuum. Residuum is typically Green Valley Tonalite that has been weathered in place, creating an arkose-like grus that can bear water, or weathering to clay with boulders (DWR 1993). This residuum is Quaternary or older in age and is wide-spread throughout the region (DWR 1967). This unit has a maximum thickness of 100 feet (DWR 1959) and an average specific yield of about 1 percent (Izbicki 1983).

Recharge Areas

Natural recharge of the basin is from infiltration of precipitation to the valley floor and percolation of ephemeral stream flow of the Santa Ysabel, Bach, Guejito, and Santa Maria Creeks. During typical years, no stream flow leaves the valley and all surface runoff becomes groundwater recharge (Izbicki 1983). Also, excess irrigation waters percolate and contribute to recharge (Izbicki 1983).

Groundwater Level Trends

In the western part of the basin, hydrographs show that groundwater levels declined about 30 feet during 1953 through about 1968, recovered about 20 feet in 1969, declined an additional 50 feet by about 1978 when the water table recovered to pre-1953 levels (Izbicki 1983). In the eastern part of the basin, the water table declined about 50 feet during 1960 through 1966, recovered by about 1972, then experienced a similar cycle and recovered to be to fill the basin in 1982 (Izbicki 1983). Water levels in 1991 were mostly

lower than in 1982 (DWR 1993). Groundwater generally moves westward through the basin (DWR 1993).

Groundwater Storage

Groundwater Storage Capacity. The estimated total storage capacity is about 73,000 af (DWR 1975). However, Izbicki (1983) calculated the storage capacity to be 58,000 af for the alluvium and greater than 5,000 af for the residuum, suggesting a total capacity of about 63,000 af.

Groundwater in Storage. Unknown.

Groundwater Budget (Type C)

Information is not available to construct a budget.

Groundwater Quality

Characterization. Groundwater in this basin is of mixed character (DWR 1993). In the eastern part of the valley, groundwater is mainly calcium bicarbonate character with TDS content mostly less than 500 mg/L (DWR 1993). In the western part of the valley, groundwater is dominantly sodium chloride in character with sulfate as a prominent minor anion (Izbicki 1983; DWR 1993). TDS concentration in the basin ranges from 350 to 1,790 mg/L (DWR 1993).

Impairments. Nitrate concentration ranges to 91.7 mg/L and elevated nitrate concentration is widespread (DWR 1993).

Well Characteristics

Well yields (gal/min)		
Municipal/Irrigation	Range: to 1,700 (alluvium) (DWR 1959)	Average: 1,000 (Izbicki 1983) to 600 (residuum) (Izbicki 1983)
Total depths (ft)		
Domestic	Range:	Average:
Municipal/Irrigation	Range:	Average:

Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
Department of Health Services and cooperators	Title 22 water quality	2

Basin Management

Groundwater management:

Water agencies

Public San Diego County Water Authority

Private

References Cited

- California Department of Water Resources (DWR). 1959. *San Dieguito River Investigation*. Bulletin 72. 174 p.
- _____. 1967. *Ground Water Occurrence and Quality, San Diego Region*. Bulletin 106-2. 233 p.
- _____. 1975. *California's ground water*. Bulletin 118. 135 p.
- _____. 1993. *San Diego Region Ground Water Studies, Phase VI*. Memorandum Report. 98 p.
- Izbicki, John A. 1983. Evaluation of the San Dieguito, San Elijo, and San Pasqual Hydrologic Subareas for Reclaimed Water Use, San Diego County, California. U. S. Geological Survey Water-Resources Investigations Report 83-4044. 131 p.

Additional References

- California Department of Water Resources (DWR). 1973. *Preliminary Evaluation of Groundwater Basins in San Dieguito Investigation*. Preliminary report. 20 p.
- _____. 1983. *San Diego County Cooperative Groundwater Studies Reclaimed Water Use, Phase I*. Southern District Report 84 p.

Errata

Substantive changes made to the basin description will be noted here.